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NOTES ON SOME TORTRICID GENERA WITH DESCRIPTIONS OF NEW AMERICAN SPECIES.

BY AUGUST BUSCK.

The Tortricid moths, placed in European and American catalogues under the generic names *Hemimene* Hübner, (*Dichrorampha* Guenée), and *Lipoptycha* Lederer, form a natural, easily distinguished group, which is at once separated from all other Tortricids (of Europe and America at least) by having veins 6 and 7 in the hind wings remote at base and nearly parallel; in all the other genera, but two,* these two veins are either approximate, connate or stalked.

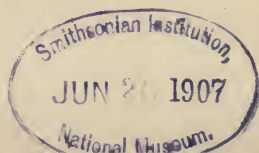
The group is an immediate offshoot from the more generalized genus, *Laspeyresia* Hübner (Meyrick & Walsingham) † and the species can from their general habitus alone be confounded with no other genus but that and *Pammene* Hübner, another parallel offshoot from *Laspeyresia*; some of the species of these latter genera are in general appearance very similar to the group under consideration, and others also approach it in having veins 6 and 7 in the hind wings rather distant instead of closely approximate as is normal; but by consideration of the pterogostic and oral characters combined, there is no difficulty in placing any of the species in its proper group.‡

The two genera *Hemimene* and *Lipoptycha* are by European authors at present separated on Lederer's original character,

* *Isotrius* Meyrick, which belongs to another subfamily and can not be confounded with the present group, and the West Indian and South American genus *Balbis* Walsingham; I am not acquainted with the type of this genus, *Carpocapsa assumptana* Walker, except through a carefully colored figure of Walker's type specimen, but it appears to be very close to *Hemimene* and must be separated from it by the palpi, which are like those of *Laspeyresia*.

† *Grapholitha* Heinemann, (Rebel); *Enarmonia* Hübner, (Fernald).

‡ Thus *maculana* Fernald, described as a *Lipoptycha*, clearly belongs to *Laspeyresia*, near *interstinctana* Clemens; Professor Fernald was presumably misled by the certainly nearly parallel (still distinctly approximate) veins 6 and 7, but the curved ascending labial palpi with the short brush and short apical joint indicate its proper genus. This genus, placed under the name *Enarmonia*, Hübner, by Professor Fernald (in Dyar's List N. Am. Lep. p. 469, 1903) is not, as given in the synonymy, equal *Enarmonia* Meyrick, which is the genus called *Epinotia* by Professor Fernald (*Steganoptycha* Stephens, Rebel).



namely, the presence or absence of the costal fold on the forewings of the males.

This division seems artificial, separating as it does, closely related species as *gruneriana* Herrich-Schaffer, from *alpinana* Treitschke; *saturnana* Guenée, from *simpliciana* Haworth; *kana* Busck, from *banana* Busck, and bringing together species with less affinities as *bugnionana* Duponchel, with *gruneriana* and *plumbana* Scopoli.

The costal fold seems to me, here as elsewhere in the present arrangement of the Tortricidae, to have been given an undue importance and does not appear to be of generic value in the family. The character is like most other secondary sexual characters in the Microlepidoptera, sporadic in its appearance and may be found developed in one species, while wanting in the most closely related species. Thus while certain genera undoubtedly have a general tendency towards the development of the fold and others appear to have no such tendency, the character is not necessarily absolute and the presence or absence of the fold is not necessarily indicative of affinity or the opposite between two species, as little as it proves relation between two genera.*

The gradual modification of this character in the group under consideration from the broad fold, occupying nearly or fully one-half of costa in *agilana* and *plumbagana*—through the narrow fold of *capitana* Busck, hardly reaching one-fourth of the wing length—to the mere trace of a fold, as found in *kana* Busck, also seems but steps towards the total disappearance of the fold in correlated species.

Absolutely no other character is found, separating the two genera, as they are at present defined and for the purpose of a natural grouping of the species, the two genera might better be united, than preserved in their present definition.

But by removing from *Lipoptycha* the species which have other and closer affinities with *Hemimene* and by taking as type for

* Thus I can not believe that genera like *Eucosma*. Hübner, Fernald (*Epiblema*, Meyrick); *Capua* Stephens and authors, and *Archips* Hübner, Fernald (*Cacoecia*, Meyrick) represent natural groups, as they are at present defined; the diversity of the venation found within them, which is far greater than in the group considered in this paper, indicates that they include pickings from a number of genera, which have the costal fold independently developed and which have no close affinities otherwise.

In a subsequent paper, now under way, I shall treat of other groups, which, I think, prove the correctness of this contention still plainer than the present.

Lederer's genus his first species, *bugnionana*, both genera may be retained and a more natural division of the group result.

In *Hemimene* would then be placed the American species hitherto described and the following European species: *plumbana*, *simpliciana*, *saturnana*, *ligulana*, *plumbagana*, *agilana*, *incursana*, *petiverella*, *sequana*, *alpestrana*, *alpinana* and probably most of the other species, at present included in both genera except *bugnionana* and *harpeana*, which together with two American species described in this paper, would make up the genus *Lipoptycha*.*

Thus arranged the two genera may be separated by the following characters:

Hemimene.

- ¹ Dorsal part of fore wing below median vein as broad or broader than the costal part above.
- ² Vein 10 in the fore wing rising at least two and one-half times farther from vein 9 than 9 from 8.
- ³ Termen of fore wing less oblique; angle with costa 60 degrees or more.
- ⁴ Apex of hind wings not protruding beyond anal angle of fore wings.
- ⁵ Second joint of labial palpi yellow at base.

Lipoptycha.

- ¹ Dorsal part of fore wing below median vein narrower than the costal part above.
- ² Vein 10 on the fore wing rising less than two and one-half times as far from vein 9, as 9 from 8.
- ³ Termen of fore wing oblique; angle with costa less than 60 degrees.
- ⁴ Apex of hind wings protruding beyond anal angle of fore wings.
- ⁵ Second joint of labial palpi not yellow.

The last color difference I certainly do not intend to advocate as a generic character of general value, but it holds good in all the species of the groups under consideration, with which I am acquainted, and I include it as another small but rather significant circumstantial evidence of the propriety of the rearrangement of the species.

All of the above characters may seem trivial, but it should be considered, that the Tortricidae is a remarkably uniform and conservative family, embracing closely allied genera; nearly all characters usually available and important are more or less identically developed in the entire family and any small, constant differences found must therefore be depended upon and

* Some of these are unknown to me except from descriptions and I should not be surprised if some of the other Alpine species shall be found to fall with *harpeana* and *bugnionana*.

are of greater significance than would be the case in more differentiated families.

The following characters are common to the two genera and apply to both sexes: Antennae about $\frac{1}{2}$, simple or with very short ciliation at the tip of each joint; labial palpi moderate, reaching about the length of the head in front of the face, porrected; second joint with large, laterally compressed triangular tuft; terminae joint relatively long, though shorter than second joint, deflexed, parallel with and nearly obscured by the hairs of the tuft; face smooth, head round with the scales meeting on top; eyes large, salient; ocelli large, placed just above the eyes behind the base of the antennae; tongue short, spiraled; maxillary palpi obsolete. Thorax smooth. Fore wing with termen more or less sinuate, sometimes abruptly broken below apex; 12 veins; 1b straight, furcate at base; a trace of 1c at the edge of the wing; 2 from about $\frac{2}{3}$ of cell; 3 from corner of cell; 7, 8 and 9 equidistant at base; 7 to termen; 11 equidistant from 10 and 12; upper internal vein from between 10 and 11 to between 7 and 8 (in *sequana* obsolete); inferior internal vein with upper fork obsolete, lower fork to between 4 and 5.

Hind wings broader than the fore wings; dorsal edge evenly rounded from apex to base; costal edge slightly and evenly rounded; termen sometimes slightly sinuate; 8 veins; 8 connected with cell near base by oblique, sometimes semi-obsolete crossbar; 1a and 1c present; 1b strongly furcate at base; base of median vein hairy; 3 and 4 connate or short-stalked; 5 distant from and parallel with 4; 6 and 7 remote at base and nearly parallel. Male genitalia with uncus rudimentary.

All the species feed in the roots or shoots of Compositae.

Two European species have been placed in the American list namely, *alpinana* Treitschke, and *plumbana* Scopoli, but their occurrence in America seems so highly improbable that I suspect the records must be based on misidentification of closely allied species and I propose to omit them until further evidence is at hand.

The American species at present known may be separated by the following synoptic table:

HEMIMENE.

Fore wings with white dorsal spot	1.
Fore wings without such spot	3.

1. Dorsal spot with narrow dark line through middle . . .	2.
Dorsal spot without such line	<i>capitata</i>
2. Fore wings with ochereous ocelloid patch	<i>incanana</i>
Fore wings without such patch	<i>britana</i>
3. Fore wings dark brown without yellow patch	4.
Fore wings not dark brown, or, if so, with yellow markings	5.
4. Fore wings with yellow irroration	<i>sedatana</i>
Fore wings without such	<i>piperana</i>
5. Fore wings with semicircular yellow dorsal spot	<i>simulana</i>
Fore wings without such spot	6.
6. Fore wings with black, undulating, transverse lines	7.
Fore wings without such lines	8.
7. Apical part of fore wings purplish	<i>plumneriana</i>
Apical part of fore wings not purplish	<i>leopardana</i>
8. Fore wings light golden yellow	<i>bittana</i>
Fore wings tawny	<i>radicolana</i>

✓ **Hemimene sedatana** sp. nov.

Labial palpi yellow, with apex of brush and terminal joint dark fuscous. Head and thorax dark fuscous. Fore wings in male without fold; termen slightly sinuate, dark brownish fuscous, irrorated with sparse, single yellow scales; costa obscurely ornamented with outwardly oblique, blackish brown streaks, intervened by yellowish white spots, from which very faint bluish-metallic lines run obliquely outwards and then abruptly downwards and inwards; edging the three more prominent of these blue lines below are very thin lines of single, deep black scales; along lower part of termen are four deep black dots. Cilia light, shining fuscous with a dirty white line through the middle. Hind wings dark brownish fuscous; underside with the strong greenish iridescence usual in this group of moths. Abdomen dark brown; anal tuft yellowish.

Alar expanse: 14 mm.

Habitat.—South Park, Colorado (Osler).

Type.—Male. U. S. Nat. Mus., No. 10,130.

This, I believe, is the species mistaken for *plumbana* Scopoli, which it greatly resembles, but from which it differs by the less profuse irroration of yellow scales and by the presence of the narrow, angulated, deep black lines, following the course of the metallic blue lines.

✓ **Hemimene piperana** sp. nov.

Labial palpi brownish yellow, with dark brown tips. Head and thorax yellowish brown. Fore wings in male without costal fold; termen nearly straight; dark reddish brown with golden reflections; costa with short, obscure, outwardly oblique, blackish striation, with the intervals lighter than the ground color of the wing; at apical third of the costa is an outwardly oblique, bluish, but hardly metallic, streak to termen below apex and irregular, short, transverse streaks of the same bluish lead color is found sparingly on the apical portion of the wing; at lower part of ter-

men are two or three blackish dots obscurely indicated. Cilia whitish mixed with brown and fuscous. Hind wings whitish fuscous, darker toward the tip; base of cilia still darker. Abdomen dark fuscous; legs ochreous-brown.

Alar expanse: 18 mm.

Habitat.—Pullman, Washington (Piper).

Type.—Male. U. S. Nat. Mus., No. 10,131.

This obscurely marked species is nearest the foregoing and the European *saturnana* Guenée, but is at once distinguished from both by its reddish brown color and the lack of yellow irroration.

✓ ***Hemimene capitana* sp. nov.**

Labial palpi yellow, with tip of tuft and apical joint light fuscous. Head and thorax light brown. Fore wings in the males with narrow costal fold, reaching one-fourth of the wing length; termen slightly sinuate; dark fuscous, sparsely irrorated with yellow; on the middle of the dorsal edge is a conspicuous, outwardly oblique, pure white spot, contracted shortly above the edge of the wing and widening out on and above the fold. Costa with obscure, whitish streaks, emitting faint, bluish, metallic, oblique lines, which fade away after passing three or four short, longitudinal, parallel, black lines, just outside of the end of the cell. Four deep black dots on lower part of termen and a few short, transverse, irregular, black lines in the apical part of the wing. Cilia light fuscous, with a central dirty white line. Hind wings light brown. Abdomen fuscous, and brush yellowish.

Alar expanse: 13 mm.

Habitat.—South Park, Colorado (Osler).

Type.—Male. U. S. Nat. Mus., No. 10,132.

Nearest to the European *petiverella* Linné but rather larger and differing in the form and color of the dorsal patch.

✓ ***Hemimene britana* sp. nov.**

Labial palpi yellow, tipped with dark fuscous. Head and thorax dark purplish brown. Fore wings in male with narrow costal fold occupying hardly one-third of the wing length; termen distinctly indented below apex; dark purplish brown, in the apical part strongly irrorated with yellow; on the middle of the dorsal edge is a large, outwardly oblique, triangular, yellowish white spot, reaching up into the cell; through the middle of the spot is a thin, more or less broken, dark line. Costa with narrow, oblique, deep-black striation, edged by yellow scales and intervened by broad, blue metallic lines, which run in broken course through the strout yellow irroration to tornus. Along termen are four deep black dots. Cilia light shining fuscous, with the darker base followed by a whitish line, which breaks through the base at the dentation of termen and emphasizes this by the color effect. Hind wings bronzy fuscous. Cilia whitish, with a very dark base and an ill-defined dark line before the tip. Abdomen purplish.

Alar expanse: 15-16 mm.

Habitat.—Kaslo, British Columbia (Dyar).

Type.—Male. U. S. Nat. Mus., No. 10,133.

This species was labeled *alpinana* Treitschke, in the Museum collection and is the species recorded as such in Proc. U. S. Nat. Mus., Vol. xxiii, p. 929, but is quite distinct from that species; the European species is smaller, has a darker yellow and differently formed dorsal spot and is strongly suffused with yellow on the entire wing, while *britana* is merely irrorated with yellow on the apical half.

✓ **Hemimene incanana** Clemens.

Halonota incanana Clemens, Proc. Acad. Nat. Sc., Phil., p. 351, 1860.

Dichrorampha incanana Fernald, Trans. Am. Ent. Soc., Phil., p. 54, 1882.

Hemimene incanana Fernald, Dyar, List N. Am. Lep., No. 5288, 1903.

Palpi white. Head dark gray. Fore wings dark brown, varied with whitish along the inner margin towards the base, with an oblique dorsal white patch, terminating in the ocelloid patch, with a slender, irregular, dark brown line on its middle, and one or two spots on the dorsal edge of the wing. The costa is streaked with white, slightly silvery; beyond the middle of the wing are one or two purplish hued lines, one of which around the ocelloid patch, where it becomes somewhat diffuse. The ocelloid patch is ocherous, with three black streaks and is nearly in the middle of the apical portion of the wing, with a white spot adjoining and beneath it. Hinder border with three or four terminal black spots above the internal angle. Hindwings dark fuscous, grayish towards the base. (Clemens.)

I am unacquainted with this species in nature, but it must be quite close to the foregoing species, *britana*, from which, however, the description differs in several particulars.

Habitat.—Pennsylvania? (Fernald.)

✓ **Hemimene simulana** Clemens.

Halonata simulana, Clemens, Proc. Acad. Nat. Sc., Phil., p. 351, 1860.

Halonata simulana, Packard, Guide Stud. Ins., p. 337, 1869.

Dichrorampha aurisignana, Zeller, Verh. K. K. Zool.-bot. Gesell. Wien, Vol. XXV, p. 319, 1875.

Dichrorampha simulana, Fernald, Trans. Am. Ent. Soc., Phil., p. 24, 1882.

Hemimene simulana, Fernald, Dyar, List N. Am. Lep., No. 5289, 1903.

Palpi dull ocherous, fuscous at the tip. Head brownish ocherous. Fore wings [in males with costal fold reaching beyond basal third] brown with a slight brassy hue, with an ocherous dorsal blotch, plain in the male and striated with brownish in the female. Costa streaked with ocherous and with two slightly violet-hued streaks from the costa, one running beneath the tip and the other to a faint ocelloid patch, behind which, on the hinder margin, are three black spots. The apical portion of the wing is varied with ocherous. Hind wings fuscous, white on the costa. (Clemens.)

Habitat.—Baltimore, Md.; Easton, Pa. (Clemens.)

In U. S. Nat. Mus. are specimens from Anglesea, N. J. (Kearfott); Jeanette, Pa. (Klages), and District of Columbia (Busck).

✓ Allied to *alpinana* Treitschke, but differing in the form of the dorsal spot.

Hemimene bittana sp. nov.

Labial palpi yellow, with tip of brush and terminal joint dark fuscous. Face and head fuscous. Thorax light yellowish brown. Fore wings in

male with costal fold, reaching one-third of the wing length; termen slightly sinuate; basal third of wing light greenish brown, apical two-thirds golden yellow; the darker basal patch is produced in the middle of the wing like an arrow point and is not very sharply limited; at basal third are two short, outwardly oblique, silvery lines from the costal edge; from the middle of costa runs a longer, oblique, silvery line, which bends downwards abruptly and forms the basal edge of a not very conspicuous ocelloid patch, which contains two or three short black dashes and is terminated by a short, perpendicular, silvery line; from apical third of costal edge to a color-indentation below apex is yet another silvery streak. The bases of the apical veins are indicated by thin, deep black, longitudinal lines and along the entire terminal edge is a row of seven or eight deep black dots. Cilia whitish, with base and tip light fuscous. Hind wings purplish fuscous with golden tips; cilia whitish, with dark base. Abdomen dark-purplish fuscous, with lighter anal tuft. Legs ochereous; tarsi faintly annulated with black.

Alar expanse: 15 mm.

Habitat.—Pittsburg, Pa. (Engel).

Type.—Male. U. S. Nat. Mus., No. 10,134.

This brilliant species comes between *simulana* Clemens, and *radicolana* Walsingham, in ornamentation, but is at once distinguished from both by the golden yellow wings.

Named in honor of "Bitten."



Hemimene radicolana Walsingham.

Dichrorampha radicolana Walsingham, Ill. Lep. Het. Br. Mus., IV, p. 75, pl. 77, fig. 10, 1879.

Dichrorampha radicolana Fernald, Trans. Am. Ent. Soc., Phil., p. 55, 1882.

Hemimene radicolana Fernald, Dyar, List N. Am. Lep., No. 5292, 1903.

Palpi tawny, projecting nearly twice the length of the head beyond it, profusely clothed, the apical joint concealed; head tufted above, tawny; antennae the same. Fore wings pale tawny; the costa arched; apex produced; apical margin oblique, indented below the apex; a basal patch, acutely angulated externally beyond the middle of the cell, is shaded within its outer margin with tawny brown, a triangular patch of the same color before the anal angle, the intermediate abbreviated, pale fascia interrupted by waved tawny lines; a tawny brown shade on the apical margin, extended inwards towards the middle of the wing, and a few short, paler brown streaks from the costa. Cilia rather shining yellowish-white, divided in the middle by a tawny line parallel with the apical margin; a fuscous spot on the cilia at the apex. Hind wings brownish fuscous; the cilia yellowish-white, divided by a tawny line (Walsingham).

Alar expanse: 17 mm.

Habitat.—Camp Watson, John Day's River, Oregon.

Food-plant.—*Scrophularia*? (Walsingham).

Type.—Female, in British Museum where I have examined it; no other specimen is known to me at present.

Hemimene leopardana sp. nov.

✓ Labial palpi light yellow, with tip of brush and apical joint black. Face orange yellow; top and sides of head mixed with black. Thorax black with yellow center and patagina. Fore wings in male without fold; termen strongly sinuate and abruptly broken below apex; bright orange yellow, lightest towards the base, deeper, more reddish at apical part; with bold, undulating, and broken, deep-black, transverse lines; costal edge broken by ten nearly equidistant black dashes, from which the cross-lines originate; the dashes are intervened by light straw-yellow spaces; from two of these yellow spaces, one on the middle of the wing and one at apical third, runs a short, outwardly oblique, dark blue metallic line; on lower half of termen are three deep black dots. Cilia blackish, with straw-yellow central line, which widens out below apex and breaks through the black base, emphasizing the sinuation there by the color effect. Hind wings rich, dark brown, with a series of orange spots at apex. Cilia whitish with dark tips and deep black base. Underside of both wings dark brown, with strong greenish iridescence and with costal and apical markings corresponding to those on the upperside.

Alar expanse: 9–10 mm.

Habitat.—Hyattsville, Md. (Busck); Pittsburg, Pa. (Engel).

Type.—Male. U. S. Nat. Mus., No. 10,135.

This exquisite little moth can not be mistaken for any of the other described species; it is nearest in pattern and size to the following species, *plummeriana*, but differs greatly in coloration.

Hemimene plummeriana sp. nov.

✓ Labial palpi whitish yellow with black tips. Head and thorax whitish, profusely mixed with black scales. Fore wings in male without costal fold; termen slightly sinuate below apex; wing sharply divided as to color in a basal light greenish-yellow part and an apical dark purplish rust-brown part; dividing these two parts is a nearly straight, bluish-metallic line, which runs obliquely from middle of costal edge to a little before tornus. Basal yellow part is boldly striated by many irregular, somewhat diffused, undulating, black crosslines; on the apical part the black and yellow costal marks are continued as in basal part, but between them originates bluish-metallic lines, one of which, together with a thin black line, runs in undulating course outwards and then abruptly downwards and inwards to tornus; another runs from apical third of costa to termen below apex. Just before apex is a deep black, round dot, similar to three dots in a row. along lower end of termen. Hind wings dark purplish-brown, with costal edge whitish, and with a marginal line of golden yellow in the apical part of the wing. Both wings on the underside light fuscous, with strong greenish-metallic reflections and with all the edge-markings of the upperside plainly indicated, even the terminal black dots. Abdomen dark fuscous above, silvery below. Legs silvery, barred and annulated with black.

Alar expanse: 10 mm.

Habitat.—Plummer's Island, Md. (in the Potomac River above Washington City) (Busck).

Type.—Male. U. S. Nat. Mus., No. 10,136.

A striking, oddly ornamented species, very distinct from all other described species. The type was taken at light on an evening in June, when Dr. Wm. Dietz and the writer spent the night on the island in pursuit of *Microlepidoptera*.

LIPOPTYCHA.

Fore wings dusted with yellow scales; in males with costal

fold *kana*, sp. nov.

Fore wings not thus dusted; in males without costal fold . *banana*, sp. nov.

✓ *Lipoptycha kana* sp. nov.

Labial palpi, head and thorax dark fuscous. Fore wings in male with a short and narrow costal fold with an expansible hairtuft, not reaching one-fifth of wing length; termen with slight sinuation below apex; color uniformly dark shining fuscous, evenly and sparsely irrorated with golden yellow scales; at the lower end of terminal edge are three black dots. Costal without any ornamentation. Cilia whitish fuscous, with darker base and tips. Hind wings dark fuscous; cilia lighter with dark base. Abdomen dark fuscous with yellowish anal brush; legs silvery fuscous; under-side of wings with faint greenish iridescence.

Alar expanse: 17–20 mm.

Habitat.—Kaslo, British Columbia (Dyar).

Type.—Male. U. S. Nat. Mus., No. 10,137.

This is the species recorded as *Hemimene plumbana* in Proc. U. S. Nat. Mus., vol. xxvii, p. 929, 1904, but has nothing to do with that species; it closely approaches *bugnionana* Duponchel, in general habitus and color, but is much larger, rather darker, and with sparser yellow irroration, besides possessing the costal fold in the males.

✓ *Lipoptycha banana* sp. nov.

Labial palpi, head and thorax dark greenish and bronzy fuscous. Forewings with no costal fold in the male, termen nearly straight; uniformly dark, shining fuscous, with light brown and blackish scales evenly intermixed, but without any golden irroration; no costal or terminal markings. Cilia whitish fuscous, with darker base and tip. Abdomen dark purplish-fuscous, and brush ochreous: legs unicolored dark fuscous.

Alar expanse: 20–24 mm.

Habitat.—South Park, Colorado (Osler).

Type.—Male. U. S. Nat. Mus., No. 10,138.

This is by far the largest of all described species of this group; it is similar in form and coloration to the foregoing species and to the European *bugnionana* Duponchel, differing from the former in the absence of yellow irroration on the fore wing and in the absence of the costal fold in the males; from the European species it differs, aside from its size, by the total absence of any defined wing-ornamentation.